

Kangaroo Rats (*Dipodomys* sp.)



Giant

Moose Peterson, WRP



Stephen's

Moose Peterson, WRP



Tipton

Moose Peterson, WRP



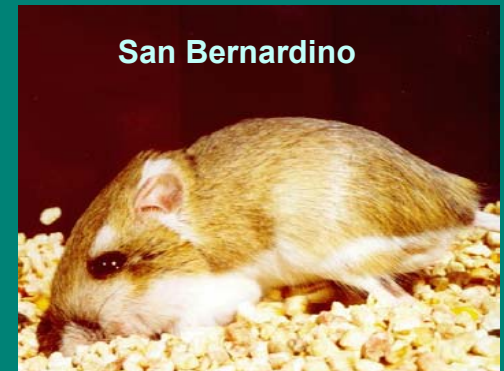
Fresno

Moose Peterson, WRP



Morro Bay

Moose Peterson, WRP



San Bernardino

Art Davenport, USFWS

September 2002

Kangaroo Rats

Behavior

- Kangaroo rats are nocturnal, and remain active all year.
- They are non-migratory.
- Giant K-rats live together in colonies, with each individual maintaining its own territory within the colony.
- Other species tend to be more solitary.
- K-rats pile seeds near their burrow entrances and stow them in tiny (1 in. deep) pit caches. They cover each cache with a thin layer of dry dirt. When the seeds have dried, they move them underground.
- They make use of ground-thumping or “drumming” as a warning or territorial signal by varying its rate and frequency. Active burrows can sometimes be identified by tapping or scraping their entrances and listening for “drumming”.
- K-rats like “dust baths”, little dusting spots can be found in the vicinity of their burrows.

Kangaroo Rat Tracks



- Hind foot measurements vary between species. Average is 1.5 inches.
- Giant Kangaroo Rat is the largest, with hind foot tracks up to 2 inches long.
- When shuffling along for feeding purposes, all four feet are down, and the tail drags on the ground.

Giant Kangaroo Rat

(*Dipodomys ingens*)



B. "Moose" Peterson/WRP

Giant Kangaroo Rat

Characteristics

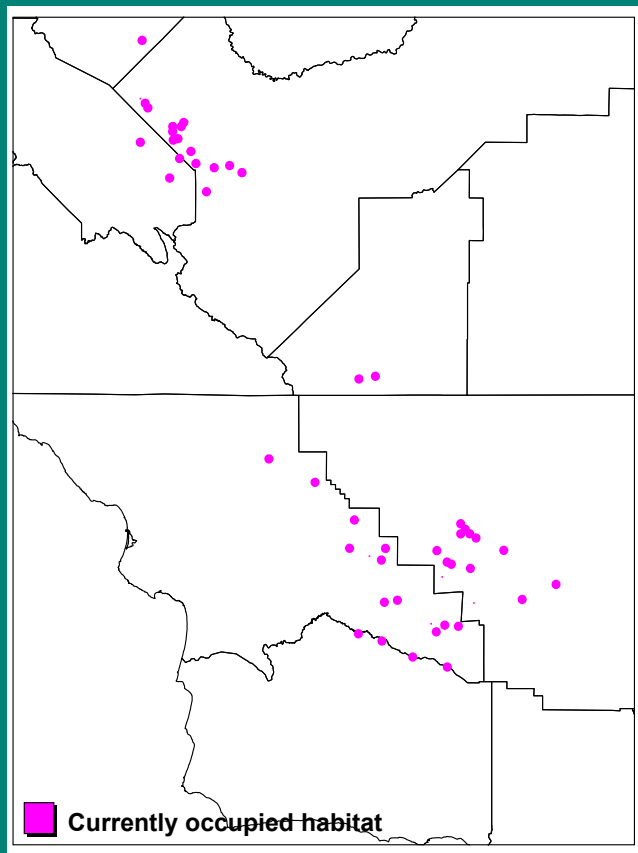


B. "Moose" Peterson

- Largest of K-rats
- Head and body average 145 mm (5.75 in.), while the tail is longer at an average 180 mm (7.25 in.).
- Adults weigh between 130 and 180 g.
- Hind foot is 46-55 mm (1.8-2.1 in.).
- Buff colored, with darker flanks and white belly.
- White hip stripe.

Giant Kangaroo Rat

Distribution



- Currently occupied habitat amounts to only 2% of its former range.
- Open areas with fine soils in southwestern San Joaquin Valley.
- Counties: Merced, Fresno, San Benito, Kings, Kern, San Luis Obispo, Santa Barbara

Stephens' Kangaroo Rat (*Dipodomys stephensi*)



B. "Moose" Peterson/WRP

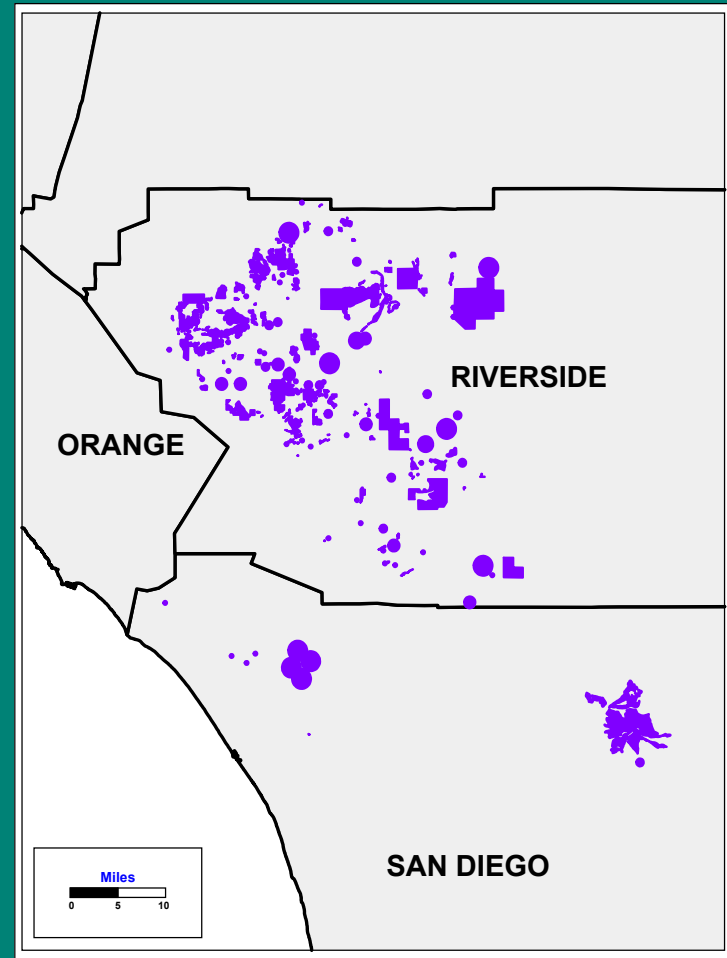
Stephens' Kangaroo Rat

Characteristics

- Head and body average 110 to 120 mm (4.3-4.75 in.) in length.
- The tail measures 160 to 180 mm (6.25 to 7 in.).
- Weight 65 g (2.2 oz).
- Hind foot is 39 - 43 mm (1.5-1.7 in.).
- Dusky, cinnamon buff-colored coat; with a visible hip stripe.

Stephens' Kangaroo Rat Distribution

- Preferred habitats: Coastal sage scrub and open grasslands.
- SKRs require well-drained, gravelly or sandy soil for their burrows.
- Counties: Riverside and San Diego.



Tipton Kangaroo Rat

(*Dipodomys nitratoides nitratoides*)



B. "Moose" Peterson/WRP

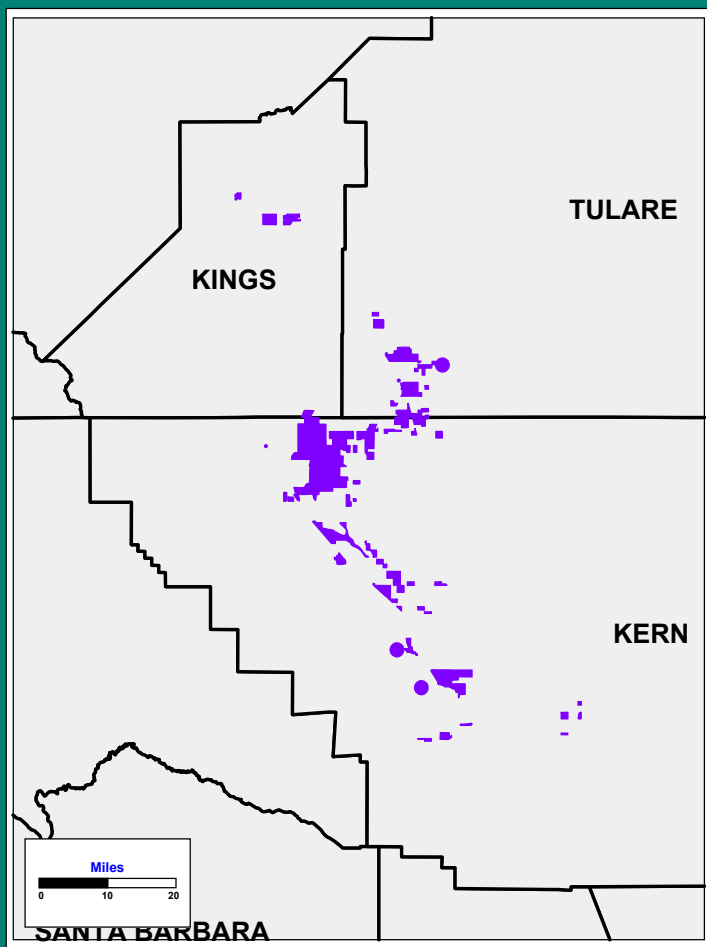
Tipton Kangaroo Rat

Characteristics

- Head and body measure 100 - 110 mm (4 - 4.3 in.).
- Tail is 125 - 130 mm (5 in.).
- Weight is 39 - 47 g (1.4 - 1.6 oz.).
- Hind foot is 33 - 37 mm (1.3-1.4 in.).
- The coat is buff-colored with white underside, white hip stripe, and a white stripe along each side of its tail.

Tipton Kangaroo Rat

Distribution



- Preferred Habitats: Alkali Marshes and Plains. Scattered woody shrubs (i.e., salt bush).
- They prefer elevated terrain for burrows (road berms, canal banks and railroad beds).
- Counties: Kings, Tulare, Kern.

Fresno Kangaroo Rat

(*Dypodomys nitratoides exilis*)



Photo: B. "Moose" Peterson/ WRP

Fresno Kangaroo Rat

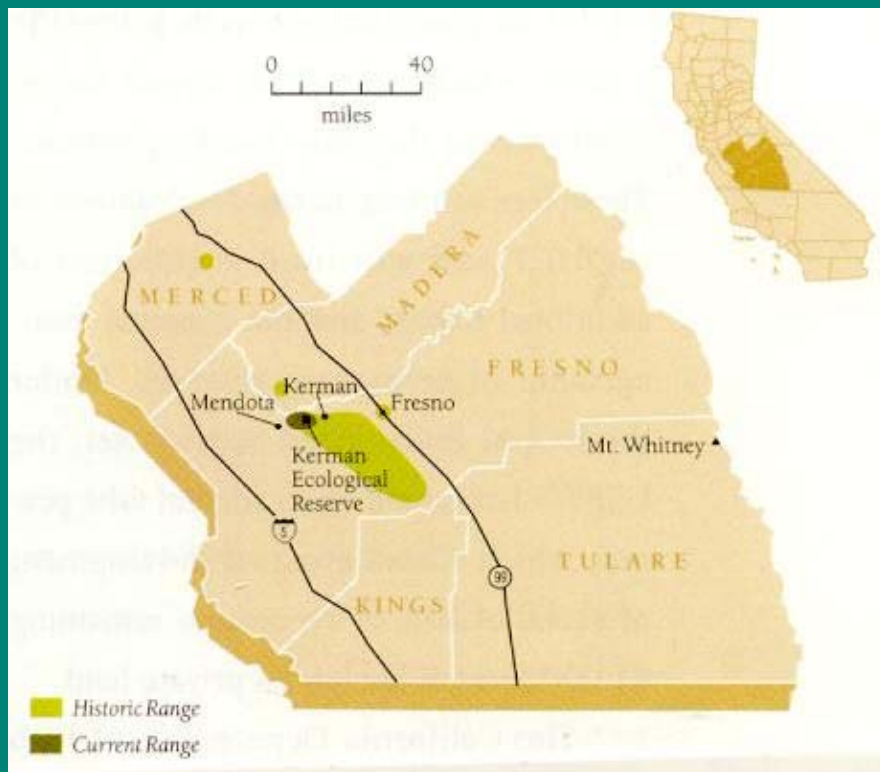
Characteristics



Photo: B. "Moose" Peterson, WRP

- Head and body together measure 10 cm (4 in) .
- Tail measures 12.2 - 15.2 cm (4.75 - 6 in).
- Weight : 39 - 47 g
- Hind foot length: 33 - 34 mm (1.3 in).
- Has a buff-colored body with white underside. It bears a white hip stripe and a dark patch across its nose.

Fresno Kangaroo Rat Distribution



- Fresno kangaroo rats ranged historically from north-central Merced County south through southwestern Madera and central Fresno counties.
- Today their range is more limited. The most recent records are from Alkali Sink Ecological Reserve (1988), and Kerman Ecological Reserve (1992), both in Fresno County.

Morro Bay Kangaroo Rat

(*Dipodomys heermanni morroensis*)



Photo: CDFG

Morro Bay Kangaroo Rat

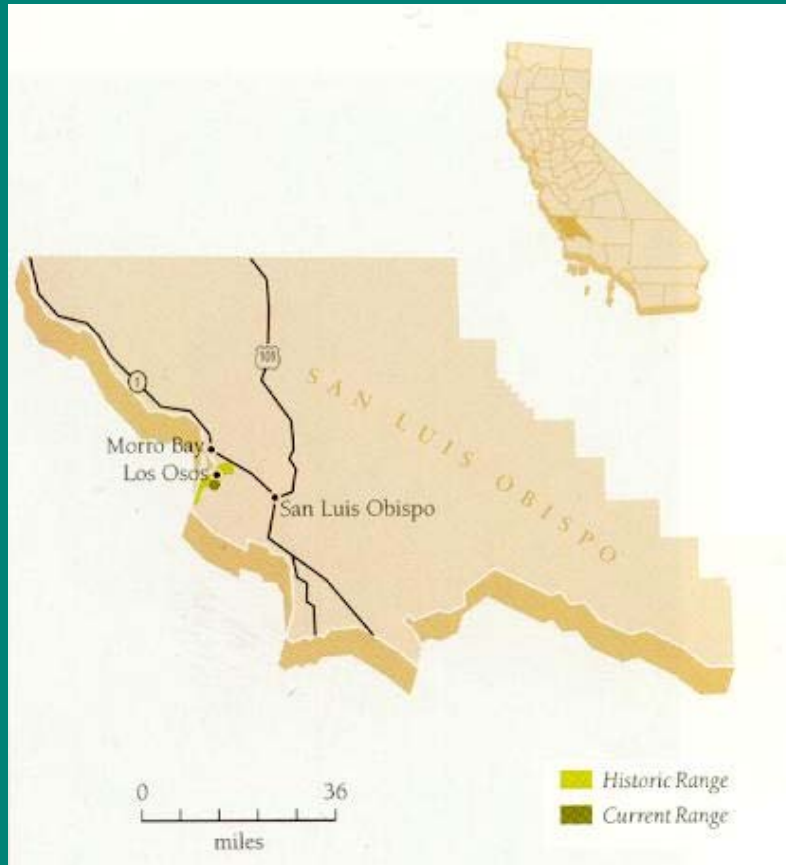
Characteristics



Photo: Moose Peterson, WRP

- Smallest of 9 subspecies of Heermann's kangaroo rat.
- Head and body together measure 10-13 cm (4-5 in).
- Tail measures about 17.5 cm (7 in).
- A full grown individual weighs about 65 g (2.3 oz).
- Darker brown than other members of this species, it bears an incomplete, white hip stripe, and a black stripe across its nose.

Morro Bay Kangaroo Rat Distribution



- The Morro Bay kangaroo rat historically was found only on the south side of Morro Bay in San Luis Obispo County.
- Within this range, signs of existing individuals have been found on a single parcel, south of the town of Los Osos, and at Los Osos Oaks State Reserve.
- There are no confirmed populations at either site, however.

San Bernardino Kangaroo Rat

(*Dipodomys nitratoides parvus*)



Photo: Art Davenport, USFWS

San Bernardino Kangaroo Rat

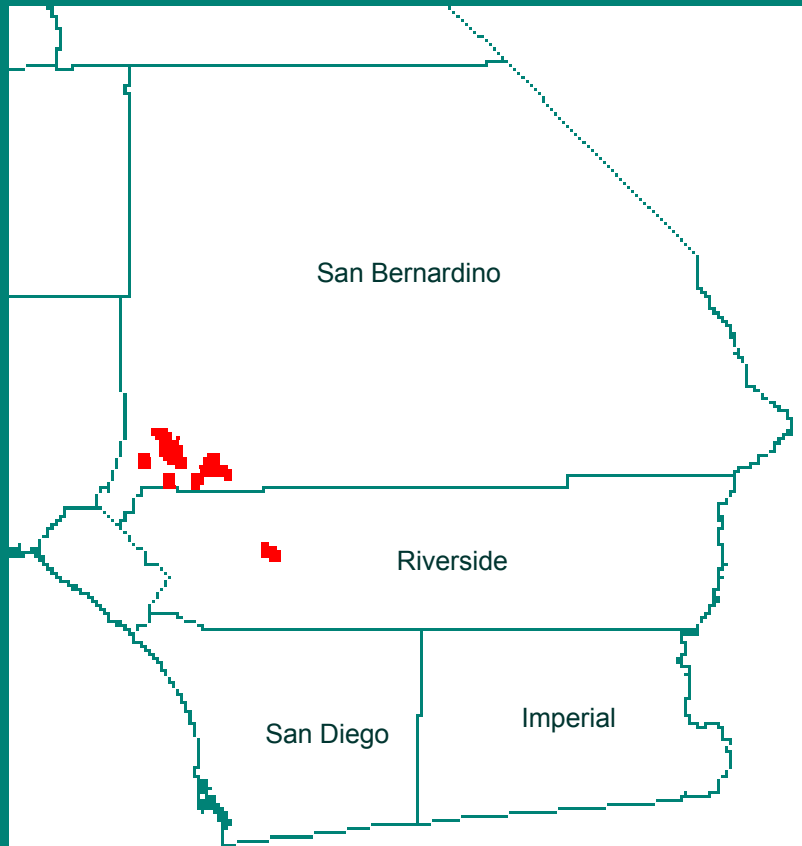
Characteristics

- Total length is 23 to 25 cm (9 - 10 in). Body length is 9.5 cm (3.7 in).
- It weighs about 35 g (1.25 oz).
- Has a light yellow to dusky brown coat with medium to dark brown tail strips, foot pads, and hairs.
- Can be distinguished from Pacific and Stephens' kangaroo rats in that it has 4 toes, instead of 5, on each of its hind feet.



Art Davenport, USFWS

San Bernardino Kangaroo Rat Distribution



- Historically, its range included over 300,000 acres of alluvial scrub habitat from the San Bernardino and San Jacinto Valleys in San Bernardino County to the Menifee and Vallevista Valleys in Riverside County.
- Currently, it occupies approximately only 3,247 acres of suitable habitat among 7 widely separated locations in San Bernardino and Riverside counties.

Kangaroo Rats

Burrow Characteristics



B. "Moose" Peterson

- Typically found on gentle slopes.
- On desert areas mounds of sand or fine soil up to 3 ft high and 12 ft wide.
- Burrow systems have multiple openings.
- Burrow openings 4-5 inches. Either a vertical shaft with circular opening, or a more horizontal shaft with elongated opening.
- Fragments of grass and seeds around burrows and along trails leading to them.

Kangaroo Rat Burrows



Tail Drags



Photos: Rosalie Faubion (USBR)

“Burrow-Plugging”

- Kangaroo rats often use a soft dirt “plug” at the entrance of their burrow during the day. This helps to maintain proper humidity and temperature levels.
- Burrow “plugs” also help to exclude predatory snakes.



Rosalie Faubion
(USBR)

Dustbaths



Photo: Rosalie Faubion (USBR)

- Kangaroo rats make use of “dust bathing” for coat maintenance. Dust baths appear to be habitually used by the same individuals.
- Little dusting spots can be found in the vicinity of their burrows.

How do we know it is an active Ground Squirrel burrow?

- Often active Ground Squirrel burrows have large deposits of dirt accumulated around their entrance. However, not all burrows show such deposits at the entrance and have to be monitored more closely.
- Look also for debris such as nutshells, fruit rinds, and scat dispersed near the entrance.
- Inactive burrows typically have cobwebs at the entrance.



Photos: Paul Gorenzel, UC Davis

How do we know it is an active Ground Squirrel burrow?



- Look for tracks (see pictures).
- If the substrate is hard, try softening up the area around the entrance by wetting it down, thus forming a “mud plate”. Track plates made by smoking aluminum or tin sheets can also be used. Chalk can also be spread around the entrance, this creates a “more durable” soft surface where tracks can be observed.

Photo: Paul Gorenzel, UC Davis

California Ground Squirrel

Elevated Bait Stations for use in Endangered Kangaroo Rat Habitat

Kangaroo Rats are extremely susceptible to rodenticides placed in traditional bait stations. Elevating existing bait stations onto 12-inch high platforms with recessed legs (see photo) prevents K-rats from accessing the bait. Ground Squirrels readily climb such platforms.



Photo: Desley Whisson (UCD Extension)

California Ground Squirrel

Modified "T" Bait Stations for use in Endangered Kangaroo Rat Habitat

Inverted "T" design: 45 degree PVC elbows and pipe can be placed on each entrance of the traditional station such that the entrance is elevated 12 in. above ground level. Ground Squirrels generally begin visiting these stations at the same time as they would visit the traditional station (1-6 days). In the event that Ground Squirrels do not visit the modified station, the extension should be removed, and the station pre-baited with clean (i.e., no poison) grain. Once the squirrels begin feeding from the station, the extension can be replaced, poison grain added, and the squirrels will continue to visit the station.



Photos: Desley Whisson, UCD Extension



Rodent Control and Protection of Burrowing Non-target Species

- When possible, try baiting first.
- If baiting doesn't work, then try burrow fumigation.
- Before fumigating burrows, make sure you are targeting active Ground Squirrel burrows.

Kangaroo Rats

Burrow Fumigant Use Limitations

(per Interim Measures County Bulletins)

- **Use Limitation Code 5:** “Use shall be supervised by a person (wildlife biologist, county agricultural commissioner, university extension advisor, state or federal official or others) who is trained to distinguish dens and burrows of target species from those of non-target species. Use shall occur only in the active burrows of target species. The person responsible for supervision shall be aware of the conditions at the site of application and be available to direct and control the manner in which applications are made (per Section 6406 of Title 3, California Code of Regulations). Contact your county agricultural commissioner for information on training.”

Kangaroo Rats

Reproduction

- The breeding season extends from January through May, and reaches its peak in early spring.
- Mating takes place outside the burrow.
- K-Rats produce litters of 2-6 offspring.
- Young are born and reared inside the burrows.

Kangaroo Rats

Food and Water

- Primarily granivorous. Cache-stored seeds make up most of their diet, although they eat the seeds of annuals and grasses in season too.
- Seeds and sometimes leaves of Peppergrass and Filaree are primary foods, along with Saltbush and Cudweed.
- KRs do not require free-standing water. Their kidneys are very efficient at deriving metabolic water from their food.

Kangaroo Rats

Mortality Factors

- Predation: predators of KRs include Barn Owls, Great-Horned Owls, Coyotes, **Kit Foxes**, Badgers, Western Rattlesnakes, Gopher Snakes, King Snakes, and Coachwhips.
- Disease
- Accidental Poisoning
- Flooding



Photo: Desley Whisson, UCD Extension